

"METHOD AND DEVICE FOR PULLING CONES OR SIMILAR  
CONTAINING AN EDIBLE PRODUCT, IN PARTICULAR ICE-CREAM  
CONES, OUT OF THE MOULD"

5 This invention relates to a method and the respective  
device for pulling cones or similar supports containing  
an edible product, in particular ice-cream cones, out  
of the moulds. According to the invention at least one  
blast of pressurised air is played against the upper  
10 edge of the mould, just near the air-casing between  
mould and cone until it causes the lifting of the  
latter, after which the locking of pincers around the  
cone is controlled, which cone leans against the arms  
of said pincers and can be removed.

15 According to a preferred embodiment a sensor able to  
detect the presence of the cone and to allow the  
activation of the pincers in due time is placed between  
the arms of the pincers.

Said operation allows to pull out of the moulds those  
20 cones not sticking out of said mould, without the need  
to seize the cone with devices that may damage it.

The invention is suitable in the industry for packaging  
of edible products and in particular in the industry  
for the production of ice-creams.

25 The realisation of systems for producing ice-creams

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implies the problem to pick up the products at cycle-end to send them to the packaging. In particular, in the case of ice-creams in cone, there is the problem to pull out of the mould the cone with the frozen product.

5 When the cone, due to its dimensions, sticks out of the mould for some centimetres, there is the need to turn to pincers devices that engage the cone near the upper edge and lift it by pulling it out of the tray.

10 The plot thickens when the length of the cone is essentially equal to the length of the mould, and therefore the cone does not stick out or sticks out to a minimum extent, or to an extent not sufficient to allow seizing it with the common pincers devices.

15 With this kind of products, accordingly, the extraction of the cone is carried out by hand, with all the consequent, both economical and hygienic, drawbacks.

20 For this reason the sector requires means of extraction allowing to pull out of the moulds the ice-cream cones without the need of manual interventions of the operator, interventions easy to be carried out, small-sized, in order that they can be easily applied also to already existing systems and with limited expenses.

25 This problem is now solved by this invention that proposes a method and the respective device to pull out of the mould cones containing an edible product,

wherein a blast of pressurised air is played between the mould and the cone, which causes the lifting of the cone that can be easily seized and removed by a pincers device.

5 According to one embodiment of the invention, on the support of the pincers device, a sensor able to detect the presence of the cone and activate the operation of the pincers when the cone is lifted by the mould for a sufficient distance is fitted.

10 This invention will be now described in full details, by way of example and without any limitation thereto, with reference to the annexed figures 1 through 4 which schematically show a device for pulling out a cone out of the mould, according to the invention, during the  
15 different phases of seizing and extraction of the product.

With reference to the figures, 1 indicates the tray of a mould containing the cone of product 2.

The tray comes from the freezing area of a system for  
20 the production of ice-creams with the cone filled with product fully contained inside the mould.

The moulds with the trays 1 are in motion, for example dragged by chain devices and, in synchrony with the moulds as many seizing devices and extraction of the  
25 cone move off, one of which is indicated as 3 in the

different figures.

The extraction device includes a support 4 on which a pneumatic cylinder 5 or similar is fitted, which activates the opening or locking of a plurality of arms of pincers 6.

Between the arms of the pincers, a sensor 7 of known type is fitted, for example a proximity sensor or similar able to detect the presence of a cone between the arms of the pincers.

10 According to the invention, each tray is coupled to a duct 8 or similar with one or more nozzles 9, connected to feeding devices of pressurised air not shown by the figure. The nozzles 9 play a blast of pressurised air against the edge of the mould, just near the interface area between mould and cone.

15 Known-type electronic devices, not shown in the figure, receive signals from the sensor 7 and activate the operation of the pincers and the blasts of air coming out of the nozzles 9.

20 The operation is the following.

The moulds with the trays 1 containing each a cone filled with product go along a freezing tank or tunnel, at the exit of which the product can be picked up.

The moulds are in motion being dragged, for example, by  
25 chains or analogous system, moving forward one step at

a time and, at the exit of the freezing area over each tray an extraction device 3 is positioned, which device moves forward in synchrony with the mould.

At the time of the collection, pressurised air to the  
5 duct 8 is fed, which air, coming out at high speed from the nozzles 9, creates as many blasts of air played against the edge of the mould, which fit into place between the mould and the cone, thus creating an air cushion which causes the lifting of the cone of some  
10 centimetres.

The cone lifts for a distance sufficient to insert between the arms 6 of the pincers.

The presence of the cone between the arms of the pincers is detected by the sensor 7, which emits a  
15 signal, which is sent to the control devices.

The latter operate the pneumatic cylinder 5 in order to activate the arms 6 of the pincers, which close around the cone.

The embodiment of the pincers, at the moment of its  
20 closure, does not squeeze the cone, which only leans on the ends of the arms without being damaged.

At this moment the pincers device is lifted and the cone with the product is sent to the packaging, while the moulds return for a new production cycle.

25 The method according to the invention turns out to be

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extremely functional since allows to pull the cones of edible product out of the respective moulds automatically, making use of devices that can be completely sterilised and without the need of any manual intervention.

In the preceding description reference has been made to a system for the extraction of cone-shaped products; it is clear that the same embodiment can be also applied to the extraction of differently shaped products, for example truncated-cone, cylindrical with upper edge, polygonal or other shapes, without lying outside the scope of protection of this invention.

Clearly the dimensions, as well as the materials used, can change according to the requirements of use.